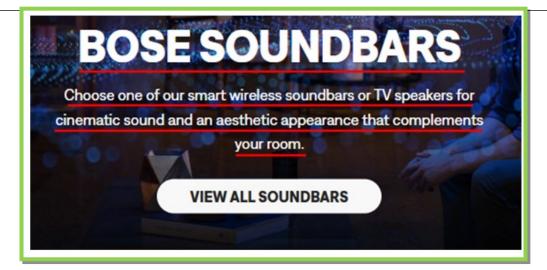
Exhibit 2.2

<u>Infringement Claim Chart for U.S. Pat. No. US7130430B2 v. Bose ("Defendant")</u> (See Accused Product List at end of chart for models)

Claim 2	Evidence
2. A speaker system for producing localized regions of sound comprising:	The Bose Smart Soundbar 900 soundbar is a speaker system for producing localized regions of sound. For example, the Bose Smart Soundbar 900 soundbar produces a surround sound effect. The surround sound effect causes a listener facing the soundbar to perceive that sound emanating from the soundbar is originating at a location behind and to the left of the listener, referred to as surround left, and at another location behind and to the right of the listener, referred to as surround right.
	Choose one of our smart wireless soundbars or TV speakers for cinematic sound and an aesthetic appearance that complements your room. VIEW ALL SOUNDBARS Source: https://www.bose.com/en_us/products/speakers/soundbars.html

	For a soundbar to come closer to a theater-like experience, it has to do more than just point sound in different directions. The Bose Smart Soundbar 900 with Dolby Atmos® goes well beyond that, adding a layer of realism no other soundbar can duplicate. Exclusive Bose technologies elevate all content by separating instruments, dialogue, and effects, and placing them in discrete parts of a room — far left, far right, overhead — for immersion like you've never felt. For all its stunning looks, the technology inside this premium Dolby Atmos®
	soundbar is what's truly astonishing. Nine speakers are precisely arranged in the
	cabinet — including two new upward firing dipole transducers. This works in
	tandem with proprietary PhaseGuide technology to beam multi-directional sound
	to distinct areas in your room, giving you the feeling that what you hear is coming
	from places where there are no physical speakers.
	Source: https://www.bose.com/en_us/products/speakers/home_theater/bose-smart-soundbar-900.html#v=bose_smart_soundbar_900_white
a multiplicity of audio frequency speakers;	The Bose Smart Soundbar 900 includes a multiplicity of audio frequency speakers. For example, the Bose Smart Soundbar 900 includes multiple full-range audio speakers positioned along acoustic front face of the soundbar.



The library of Dolby Atmos-encoded content is growing, but much of what's available today remains 5.1 or stereo sound. That's why our smart wireless soundbars feature TrueSpace. It analyzes and upmixes signals other than Atmos to provide fully immersive, multi-channel sound for all entertainment — so everything gets an added layer of immersion and realistic height effects.

Source: https://www.bose.com/en_us/products/speakers/soundbars.html

For all its stunning looks, the technology inside this premium Dolby Atmos® soundbar is what's truly astonishing. Nine speakers are precisely arranged in the cabinet — including two new upward firing dipole transducers. This works in tandem with proprietary PhaseGuide technology to beam multi-directional sound to distinct areas in your room, giving you the feeling that what you hear is coming from places where there are no physical speakers.

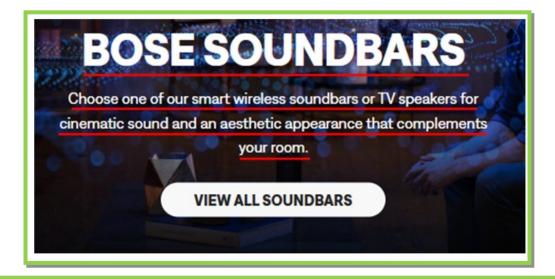
When there's no Dolby Atmos content, like stereo or 5.1, Bose TrueSpace™ technology takes over for the vertical experience, remixing signals to add "height" without adding a ceiling speaker, creating the same immersive sound experience.

Source: https://www.bose.com/en_us/products/speakers/home_theater/bose-smart-soundbar-900.html#v=bose_smart_soundbar-900_white

at least one defined sound target spaced from each of the speakers of the multiplicity of speakers, wherein each speaker has a means for applying a time varying audio drive voltage which is substantially identical, except The Bose Smart Soundbar 900 has at least one defined sound target spaced from each of the speakers of the multiplicity of speakers. Each speaker has a means for applying a time varying audio drive voltage which is substantially identical, except that each audio drive voltage is offset in time by an amount which is related to the distance between each speaker and the defined sound target. So that substantially identical sound from each speaker reaches the sound target at the same time.

For example, each of the Bose Smart Soundbar 900 speakers is connected to an audio amplifier. A speaker have multichannel sound i.e., a surround left channel signal is provided to each speaker via the speaker's respective amplifier. The surround left channel is delayed slightly for speakers on the listener's left compared to speakers on the listener's right. The amount of delay is such that sound waves emanating from each of the speakers reach the surround left location at the same time, thereby interfering constructively to produce a resultant sound wave having peak spatial amplitude at the surround left location. When this wave reflects back to the listener, the listener perceives that the sound originated from the surround left location.

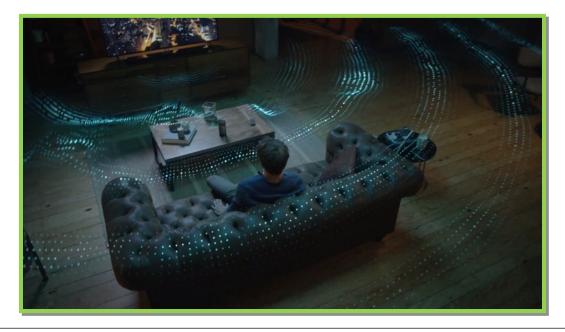
that each audio drive voltage is offset in time by an amount which is related to the distance between each speaker and the defined sound target, so that substantially identical sound from each speaker reaches the sound target at the same time;



Dolby Atmos soundbars redefine what it means to get a theater-like immersive experience in your living room. It allows content creators to separate effects and dialogue, then place them in discreet parts of the room. So it feels like you're in the middle of the story, surrounded in sound.

The library of Dolby Atmos-encoded content is growing, but much of what's available today remains 5.1 or stereo sound. That's why our smart wireless soundbars feature TrueSpace. It analyzes and upmixes signals other than Atmos to provide fully immersive, multi-channel sound for all entertainment — so everything gets an added layer of immersion and realistic height effects.

Source: https://www.bose.com/en_us/products/speakers/soundbars.html



For a soundbar to come closer to a theater-like experience, it has to do more than just point sound in different directions. The Bose Smart Soundbar 900 with Dolby Atmos® goes well beyond that, adding a layer of realism no other soundbar can duplicate. Exclusive Bose technologies elevate all content by separating instruments, dialogue, and effects, and placing them in discrete parts of a room — far left, far right, overhead — for immersion like you've never felt.

For all its stunning looks, the technology inside this premium Dolby Atmos® soundbar is what's truly astonishing. Nine speakers are precisely arranged in the cabinet — including two new upward firing dipole transducers. This works in tandem with proprietary PhaseGuide technology to beam multi-directional sound to distinct areas in your room, giving you the feeling that what you hear is coming from places where there are no physical speakers.

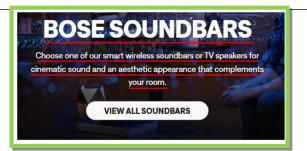
Source: https://www.bose.com/en_us/products/speakers/home_theater/bose-smart-soundbar-900.html#v=bose smart soundbar 900 white

at least a first defined sound target and a second defined sound target, the second sound target being spaced from the first sound target, and the first sound target and the second sound target

The Bose Smart Soundbar 900 has at least a first defined sound target and a second defined sound target. The second sound target is spaced from the first sound target. The first sound target and the second sound target are spaced from each of the speakers.

For example, the Bose Smart Soundbar 900 speaker surround left location is at a rear position on a left-side wall of a nominally sized room. The omni-direction speaker surrounds multiple location i.e., right location is at a rear position on the right-side wall of the room. Additionally, the Truespace feature enables the soundbar to adapt to the dimensions of the room.

being spaced from each of the speakers of the multiplicity of speakers,

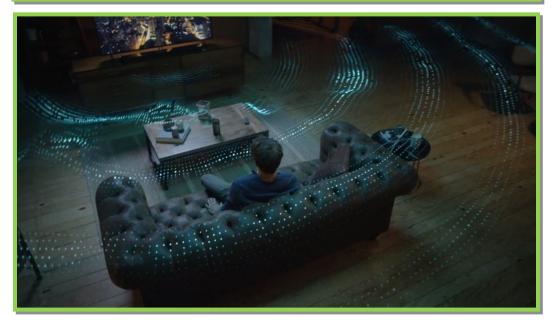


The library of Dolby Atmos-encoded content is growing, but much of what's available today remains 5.1 or stereo sound. That's why our smart wireless soundbars feature TrueSpace. It analyzes and upmixes signals other than Atmos to provide fully immersive, multi-channel sound for all entertainment — so everything gets an added layer of immersion and realistic height effects.

Source: https://www.bose.com/en_us/products/speakers/soundbars.html

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For all its stunning looks, the technology inside this premium Dolby Atmos® soundbar is what's truly astonishing. Nine speakers are precisely arranged in the cabinet — including two new upward firing dipole transducers. This works in tandem with proprietary PhaseGuide technology to beam multi-directional sound to distinct areas in your room, giving you the feeling that what you hear is coming from places where there are no physical speakers.



Source: https://www.bose.com/en_us/products/speakers/home_theater/bose-smart-soundbar-900.html#v=bose_smart_soundbar_900_white

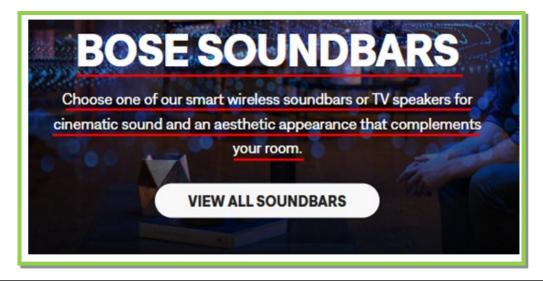
and wherein the means for

The means for applying a time varying audio drive voltage comprises at least a first audio source which is offset in time by an amount which is related to the distance

applying a time varying audio drive voltage comprises: at least a first audio source which is offset in time by an amount which is related to the distance between each speaker and the first defined sound target; and

between each Bose speaker and the first defined sound target.

For example, a delay is added to the surround left channel (e.g. first audio source) before it is applied to a Bose speaker on the left-side of the soundbar, as viewed from the listener's position. The delay relates to the distance between the speaker and the surround left location in the nominally sized room, whereby the speaker closest to the surround left location has the most delay.



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The library of Dolby Atmos-encoded content is growing, but much of what's available today remains 5.1 or stereo sound. That's why our smart wireless soundbars feature TrueSpace. It analyzes and upmixes signals other than Atmos to provide fully immersive, multi-channel sound for all entertainment — so everything gets an added layer of immersion and realistic height effects.

Source: https://www.bose.com/en_us/products/speakers/soundbars.html

For a soundbar to come closer to a theater-like experience, it has to do more than just point sound in different directions. The Bose Smart Soundbar 900 with Dolby Atmos® goes well beyond that, adding a layer of realism no other soundbar can duplicate. Exclusive Bose technologies elevate all content by separating instruments, dialogue, and effects, and placing them in discrete parts of a room — far left, far right, overhead — for immersion like you've never felt.

For all its stunning looks, the technology inside this premium Dolby Atmos® soundbar is what's truly astonishing. Nine speakers are precisely arranged in the cabinet — including two new upward firing dipole transducers. This works in tandem with proprietary PhaseGuide technology to beam multi-directional sound to distinct areas in your room, giving you the feeling that what you hear is coming from places where there are no physical speakers.

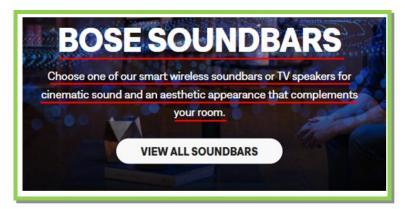
Source: https://www.bose.com/en_us/products/speakers/home_theater/bose-smart-soundbar-900.html#v=bose smart soundbar 900 white

at least a second audio source which is offset in time by an amount which is related to the distance between each speaker and the second defined sound target wherein a sum of the first audio source which is offset in time and the second audio source which is offset in The Bose Smart Soundbar 900 includes at least a second audio source which is offset in time by an amount which is related to the distance between each speaker and the second defined sound target. The sum of the first audio source and the second audio source is used to produce the time varying audio drive voltage. Substantially identical sound from the first audio source signal reaches the first sound target at the same time, and substantially identical sound from the second audio source signal reaches the second target at the same time.

For example, a delay is added to the surround right channel (e.g. second audio source) before it is applied to a speaker on the right-side of the soundbar. The delay relates to the distance between the speaker and the surround right location, whereby the speaker closest to the surround right location has the most delay. Each speaker is provided, via its amplifier, with a surround left channel signal and a surround right channel signal, each signal having a respective delay. The signals are added together before being input to the respective amplifier. Consequently, each Bose speaker emits a sound wave comprising audio from the surround left channel and from the surround right channel, the audio from each channel having an appropriate amount of delay such that the surround left audio reaches the surround left location at the same time as the surround

time is used to produce the time varying audio drive voltage so that substantially identical sound from the first audio source signal reaches the first sound target at the same time, and substantially identical sound from the second audio source signal reaches the second target at the same time.

right audio reaches the surround right location.



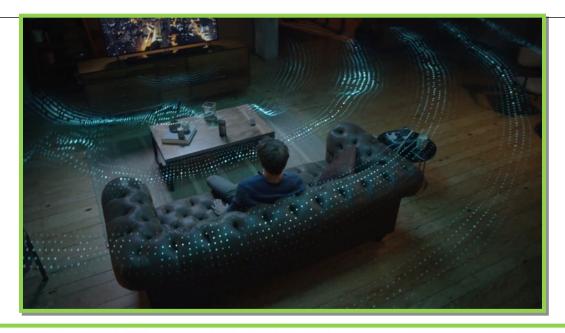
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The library of Dolby Atmos-encoded content is growing, but much of what's available today remains 5.1 or stereo sound. That's why our smart wireless soundbars feature TrueSpace. It analyzes and upmixes signals other than Atmos to provide fully immersive, multi-channel sound for all entertainment — so everything gets an added layer of immersion and realistic height effects.

Source: https://www.bose.com/en_us/products/speakers/soundbars.html

For a soundbar to come closer to a theater-like experience, it has to do more than just point sound in different directions. The Bose Smart Soundbar 900 with Dolby Atmos® goes well beyond that, adding a layer of realism no other soundbar can duplicate. Exclusive Bose technologies elevate all content by separating instruments, dialogue, and effects, and placing them in discrete parts of a room — far left, far right, overhead — for immersion like you've never felt.

For all its stunning looks, the technology inside this premium Dolby Atmos® soundbar is what's truly astonishing. Nine speakers are precisely arranged in the cabinet — including two new upward firing dipole transducers. This works in tandem with proprietary PhaseGuide technology to beam multi-directional sound to distinct areas in your room, giving you the feeling that what you hear is coming from places where there are no physical speakers.



When there's no Dolby Atmos content, like stereo or 5.1, Bose TrueSpace™ technology takes over for the vertical experience, remixing signals to add "height" without adding a ceiling speaker, creating the same immersive sound experience.

Source: https://www.bose.com/en_us/products/speakers/home_theater/bose-smart_soundbar-900.html#v=bose_smart_soundbar_900_white

<u>Infringement Claim Chart for U.S. Pat. No. US7130430B2 v. Bose ("Defendant")</u> (See Accused Product List at end of chart for models)

Claim #3	Evidence
3. A speaker system for	The Bose Smart Soundbar 900 is speaker a system for producing localized regions of sound.
producing localized regions of sound comprising:	For example, the soundbar produces a surround sound effect. The surround sound effect causes a listener facing the soundbar to perceive that sound emanating from the soundbar is originating at a location behind and to the left of the listener, referred to as surround left, and at another location behind and to the right of the listener, referred to as surround right.
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	Source: https://www.bose.com/en_us/products/speakers/soundbars.html

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When there's no Dolby Atmos content, like stereo or 5.1, Bose TrueSpace™ technology takes over for the vertical experience, remixing signals to add "height" without adding a ceiling speaker, creating the same immersive sound experience.

Source: https://www.bose.com/en_us/products/speakers/home_theater/bose-smart-soundbar-900.html#v=bose smart soundbar 900 white

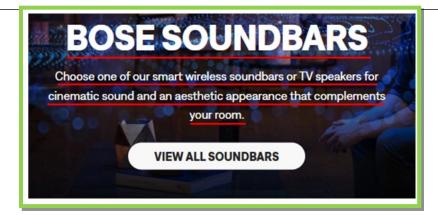
at least one defined sound target spaced from each of the speakers of the multiplicity of speakers, wherein each speaker has a means for applying a time varying audio drive voltage which is substantially identical. except that each audio drive voltage is offset in

time by an

The Bose Smart Soundbar 900 has at least one defined sound target spaced from each of the speakers of the multiplicity of speakers. Each speaker has a means for applying a time varying audio drive voltage which is substantially identical, except that each audio drive voltage is offset in time by an amount which is related to the distance between each speaker and the defined sound target. So that substantially identical sound from each speaker reaches the sound target at the same time.

For example, each of the speakers is connected to an audio amplifier. A surround left channel signal is provided to each speaker via the speaker's respective amplifier. The surround left channel is delayed slightly for speakers on the listener's left compared to speakers on the listener's right. The amount of delay is such that sound waves emanating from each of the speakers reaches the surround left location at the same time, thereby interfering constructively to produce a resultant sound wave having a peak spatial amplitude at the surround left location. When this wave reflects back to the listener, the listener perceives that the sound originated from the surround left location.

amount which is related to the distance between each speaker and the defined sound target, so that substantially identical sound from each speaker reaches the sound target at the same time; and



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Source: https://www.bose.com/en_us/products/speakers/soundbars.html



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wherein the means for applying a time varying audio drive voltage includes a class D amplifier.	The means for applying a time varying audio drive voltage includes a class D amplifier. For example, each amplifier connected to a respective speaker is a class D audio amplifier.

Configuration

The all-in-one Bose Smart Soundbar 900 comes with a total of nine drivers packed into its sleek chassis. Four oval-shaped 4 x 2-inch full-range transducers and a 1-inch tweeter supply audio for the left, right, and center channels, while a pair of 1-inch "PhaseGuide"-enabled tweeters are designed to "project sound in the room," according to Bose. Finally, two upfiring, 4 x 2-inch oval dipole transducers bounce Dolby Atmos height cues off the ceiling, an alternative to height speakers in your ceiling. Each driver is powered by its own Class-D amplifier.

Source: https://www.techhive.com/article/620621/bose-smart-soundbar-900-review.html

Accused Product List

Bose Smart Soundbar 900

Bose Smart Soundbar 700

Bose Smart Soundbar 600

Bose Smart Soundbar 300

Bose TV Speaker

References

[1] Bose Soundbars

https://www.bose.com/en_us/products/speakers/soundbars.html

[2] Bose Smart Soundbar 900

https://www.bose.com/en_us/products/speakers/home_theater/bose-smart-soundbar-900.html#ProductTabs_tab1

[3] Bose TV Speaker

https://www.bose.com/en_us/products/speakers/home_theater/bose-tv-speaker.html#ProductTabs_tab1

[3] Bose Smart Soundbar 600

https://www.bose.com/en_us/products/speakers/home_theater/bose-smart-soundbar-600.html#v=bose smart soundbar 600 black

[4] Bose Smart Soundbar 300

https://www.bose.com/en_us/products/speakers/home_theater/bose-smart-soundbar-300.html#v=bose smart soundbar 300 club black ast

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[7] TechHive - Bose Smart Soundbar 900 review

https://www.techhive.com/article/620621/bose-smart-soundbar-900-review.html